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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/838,905	04/20/2001	Kenichiro Kobayashi	KIK01 P322	1673

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EXAMINER

SUN, XIUQUIN

ART UNIT	PAPER NUMBER
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2863

DATE MAILED: 12/02/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/838,905

Applicant(s)

KOBAYASHI, KENICHIRO

Examiner

Xiuqin Sun

Art Unit

2863

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 September 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 8.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-2, 6-8 and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rose et al. (U.S. Pat. No. 6248994 B1) in view of Newman (U.S. Pat. No. 4824250) and Kinrot et al. (U.S. Pat. No. 6424407).

Rose et al. teach a method for measuring the amount which an object to be measured has moved in a plane and back-and-forth using a granular speck pattern generated by a reflecting laser beam in non-contact fashion (see abstract, lines 1-6; figs. 1-9; col. 1, lines 27-36; col. 2, lines 25-56; col. 6, lines 15-26 and col. 7, lines 4-9), comprising steps of: irradiating an object to be measured with a laser beam (col. 8, lines 15-67 and col. 9, lines 1-26); optically picking up the granular speck pattern generated by the reflecting laser beam by a detector and using the detected speck pattern as an index (see figs. 2-9; col. 6, lines 40-49; col. 9, lines 29-32, 64-67; col. 10, lines 1-19, lines 43-54, lines 63-67; col. 11, lines 1-2, lines 30-36, lines 59-63; col. 12, lines 30-39, lines 52-59 and col. 13, lines 6-12); calculating the amount of movement of the object based on the movement of a new granular speck pattern corresponding to the moved position of the object with respect to said index (col. 13, lines 25-44); and displaying a

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result of the calculation as a numerical value of the measured amount of movement (col. 14, lines 19-34 and lines 52-67). Rose et al. also teach an apparatus for measuring the amount which an object to be measured has moved in a plane and back and forth using a granular speck pattern generated by a reflecting laser beam (see abstract), said apparatus comprising: a laser projector to generate a granular speck pattern corresponding to a rough surface of an object to be measured (see fig. 1-9; col. 8, lines 15-67 and col. 9, lines 1-26); a line sensor to pick up said granular speck pattern used as an index (col. 14, lines 7-19); an A/D converter coupled to said line sensor to convert an analog signal supplied from said line sensor to a digital signal (col. 3, lines 57-58 and col. 13, lines 21-25); a processing unit coupled to the A/D converter to calculate the amount of movement of said object on the basis of movement of the granular speck in said pattern with respect to a change in the pixel interval of said granular speck pattern picked up by said line sensor and represented by said A/D converted signal (col. 14, lines 7-19; col. 14, lines 41-51). The teachings of Rose et al. further include: an electrical circuit coupled to said line sensor for calculating the amount of movement of said object on the basis of movement of the granular speck in said pattern with respect to a pixel interval of said granular speck pattern picked up by said line sensor (col. 2, lines 57-67; col. 3, lines 1-24; col. 4, lines 18-22; col. 14, lines 8-19 and lines 41-51); a laser source for generating a granular speck pattern corresponding to a rough surface of an object to be measured (col. 6, lines 40-49; col. 8, lines 15-67 and col. 9, lines 1-26); a collimated light source for generating a granular speck pattern corresponding to

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the surface of an object to be measured (col. 8, lines 24-28 and lines 45-52); said collimated light source is a laser (col. 8, lines 17-18).

Rose et al. do not explicitly mention that: directly sensing the granular speck pattern without the use of a lens; moving said object toward and/or away from said detector; said processing unit (or a computer) includes a display to display the amount of movement calculated by said processing unit.

Newman discloses an apparatus which scans a test object with a laser beam to detect defects in the object, and teaches a method for directly sensing speckle patterns of a moving object without the use of a lens (col. 2, lines 11-21, lines 24-35; col. 6, lines 6-16 and col. 8, lines 47-59). It would have been obvious to include the teaching of Newman lensless sensing technique in the Rose system in order to eliminate the need of complex and expensive optical components such as lenses in measuring the movement of an object in non-contacting fashion.

Kinrot et al. disclose a method for determining the relative motion of a surface with respect to a measurement device, and teaches an embodiment in which non-contact optical measurement of velocity and translation is made for an object moving toward and/or away from the measurement device (col. 1, lines 4-7, lines 9-14, lines 24-35 and lines 41-67; col. 2, lines 1-35; col. 6, lines 28-45; col. 7, lines 45-52; col. 8, lines 14-46 and col. 26, lines 21-48). It would have been obvious to include the teaching of Kinrot measurement of translation in the Rose system in order to provide a method and apparatus that can detect the movement of an object toward and away from the detector in non-contacting fashion.

It is deemed that it is a common knowledge and well known practice to use a display that is coupled to a processing unit (or a computer) for displaying the output generated by the processing unit. It would have been obvious to include a display coupled to said processing unit in Rose system in order to display the measured amount of movement of an object.

3. Claims 3, 9 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rose et al. in view of Newman and Kinrot et al. as applied to claims 2, 8 and 13-14 above, and further in view of Omura (JP 404021255 A).

The Rose, Newman and Kinrot combination teaches a method and apparatus that includes the subject matter discussed above except that: said line sensor comprises a tube which is cylindrical; a light shield position in front of said line sensor.

Omura teaches a line image sensor that includes a light shield section in front of said line sensor (see abstract and constitution). It would have been obvious to include the teachings of Omura light shield section in the Rose system in order to measure the amount of movement of an object in non-contact fashion accurately.

4. Claims 4-5, 10-11 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rose et al. in view of Newman, Kinrot et al. and Omura as applied to claims 2-3, 8-9 and 13-15 above, and further in view of Kashiwagi (U.S. Pat. No. 5864944).

The Rose, Newman, Kinrot and Omura combination teaches a method and apparatus that includes the subject matter discussed above except that: said line sensor comprises a tube which is cylindrical.

Kashiwagi et al. teach a line sensor that includes a tube and said tube is cylindrical (col. 2, lines 3-22 and col. 5, lines 11-16). It would have been obvious to include the teachings of Kashiwagi line sensor in the Rose and Omura combination in order to measure the amount of movement of an object in non-contact fashion accurately.

### ***Response to Arguments***

5. Applicant's arguments with respect to claims 1-17 have been considered but are moot in view of the new ground(s) of rejection.

Claims 1-17 are rejected as new art references (U.S. Pat. No. 4824250 and U.S. Pat. No. 6424407) have been found to teach the method steps of direct sensing the speckle pattern without the use of a Fourier-transforming lens and detecting movement of an object toward and away from the detector. For detailed response, please refer to paragraph 3-6 set forth above in this Office Action.

### ***Conclusion***

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

***Contact Information***

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Xiuqin Sun whose telephone number is (703)305-3467.

The examiner can normally be reached on 7:00am-4:30pm.

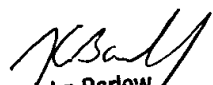
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (703)308-3126. The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9318 for regular communications and (703)872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

XS

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November 27, 2002

  
John Barlow  
Supervisory Patent Examiner  
Technology Center 2800